NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

PASTURE AND HAY PLANTING

(Acre)
CODE 512

DEFINITION

Establishing native or introduced forage species.

PURPOSES

The purpose of this practice is to support one or more of the following:

- Establish adapted and compatible species, varieties, or cultivars for forage production.
- Improve or maintain livestock nutrition and/or health.
- Balance forage supply and demand during periods of low forage production.
- Reduce soil erosion and improve water quality.
- Increase carbon sequestration

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied as a stand alone practice or as part of a conservation management system.

This practice may be applied on lands where forage production and/or conservation is needed and feasible.

This practice may be implemented on lands that meet the criteria for wetlands, only if the practice will not result in manipulation of a wetland as defined in the NRCS National Food Security Act Manual (NFSAM).

CRITERIA

General Criteria Applicable To All Purposes

Pasture and hay plantings shall comply with all local, state and Federal laws and regulations.

Impact to cultural resources, wetlands and Federal and State protected species shall be evaluated and avoided or minimized to the extent practicable during planning, design and implementation of this conservation practice in accordance with established National and Florida NRCS policy, General Manual (GM) Title 420-Part 401; Title 450-Part 401, Title 190-Parts 410.22 and 410.26), and National Planning Procedures Handbook (NPPH) FL Supplements to Parts 600.1 and 600.6, National Cultural Resources Procedures Handbook (NCRPH), and The National Environmental Compliance Handbook (NECH).

All necessary permits and letters of exemption shall be obtained prior to implementation of this practice.

Site specific practice effects shall be evaluated for the practice in accordance with guidance information contained in the NPPH, and Sections III and V of the NRCS Field Office Technical Guide (FOTG).

Plant species and their cultivars shall be selected based upon:

- Climatic conditions, such as annual rainfall, seasonal rainfall patterns, growing season length, humidity levels, temperature

extremes and the USDA Plant Hardiness Zones.

- Soil condition and position attributes such as pH, available water holding capacity, aspect, slope, drainage class, fertility level, salinity, depth, flooding and ponding, and levels of toxic elements that may be present.
- Resistance to disease and insects common to the site or location.
- Plant compatibility with other forage species and their selected cultivar(s) in rate of establishment, maturity, growth habit, and grazing tolerance when seeded together as a forage mixture.
- Resistance to disease and insects common to the site or location.
- Potential for plant species to become a nuisance or invasive-exotic species in natural plant communities or other areas.

NRCS policy prohibits the recommendations of species listed on “Official” county, state, or federal noxious and/or invasive species lists (GM. Title 190, Part 414.31). For the purposes of this standard, the list of Category I invasive-exotic plant species developed by the Florida Exotic Pest Plant Council (FLEPPC) is considered an “Official” list. The FLEPPC list can be accessed at http://www.fleppc.org/Plantlist/list.htm.

Specified seeding/plant material rates, methods of planting, date of planting, and seedbed preparation shall be consistent with the specifications found Section IV of the FOTG, Florida Agronomy Handbook, and/or the National Range and Pasture Handbook (NRPH).

Seeding rates will be calculated on a pure live seed (PLS) basis or percent germination when certified seed is available. In the event that certified seed is not available the seeding rate will be calculated based on a germination test of the seed lot.

PLS is calculated using the Percent Purity and Percent Germination of a seed lot. Purity and Germination are based upon tests conducted by an independent seed laboratory.

Pure Live seed is determined by multiplying the Percent Purity by the Percent Germination. The result is called a "PLS Correction Factor."

The Correction Factor is used to calculate the total actual or "bulk" weight of seed required for planting. To determine the amount of bulk seed needed divide the recommended planting rate (lbs. seed per acre) by the PLS Correction Factor. This will result in the quantity of bulk seed needed to plant Pure Live Seed at the recommended rate.

Example: You want to seed Bahiagrass at 10 lbs./acre PLS. The seed tag shows the purity is 90% and the germination is 80%. Therefore the PLS Correction Factor is 0.72 (0.90 x.0.80 = 0.72). You would need 13.89 lbs./acre of bulk seed to plant 10 lbs/acre of Pure, Live Bahiagrass seed (10 / 0.72 = 13.89).

All seed and vegetative material shall be planted at the appropriate depth to ensure germination and establishment under normal conditions.

Planting dates shall be scheduled:

- During periods when soil moisture is adequate for germination and establishment.
- Early enough in the growing season to ensure successful establishment.

When planting into a tilled field, seed shall be planted into a firm, weed-free seedbed. This will that ensure the seed will contact soil moisture uniformly, facilitate seedling emergence, and provide a rooting medium that does not restrict establishment or allow roots to become dry.

When planting into existing sod, the site shall be heavily grazed, mowed or burned to remove top growth. Following the removal of top growth the site shall be mechanically tilled to obtain 30 to 50% disturbed soils. If prescribed burning is used the practice shall be planned and implemented in accordance with Florida conservation practice standard Code 338, Prescribed Burning.

All seed and planting materials shall meet state quality standards.

Fertilizer and soil amendment recommendations shall be based on results from a current soil test. Where nutrients are applied at maintenance rates a current soil test is one that is no older than **five** years. For nutrient applications above maintenance levels a current soil test is one that is no older than **one** year. Application shall be appropriately placed and timed to be effective.

All nutrients applied as fertilizers and soil amendments shall be applied in a manner consistent with Florida NRCS conservation practice standard, Nutrient Management, Code 590.

Legume seed shall be inoculated with the proper, viable rhizobia before planting.

If coated seed is used the planting equipment shall be recalibrated to deliver the same number of seed per area as would be applied with non-coated seed.

Livestock shall be excluded until the plants are well established. Annual grasses are generally well established when they are 6 to 8 inches tall, the third leaf is fully developed, and the plant cannot be easily pulled out of the ground. Perennial grasses usually require 90 days to become well established. Some plants, such as native, warm season grasses and perennial peanut may require 1 full year or more to become well established.

Pest plants and insects shall be controlled as needed in accordance with NRCS conservation practice standard Pest Management, Code 595.

Additional Criteria for Improving or Maintaining Livestock Nutrition and/or Health

Forage species planted shall be selected based on the intended use, realistic yield expectations, maturity stage, compatibility with other forage species and level of management required.

To the maximum extent possible, species shall be selected that are capable of meeting the desired level of nutrition for the intended kind and class of the livestock.

Additional Criteria for Balancing the Forage Supply and Demand During Low Forage Production Periods

Forage species selected for establishment shall provide an adequate quantity and quality of forage to overcome the recognized dietary deficiency within the year long forage/grazing management program.

Additional Criteria for Reducing Erosion and Improving Water Quality.

Selected planting material shall provide adequate ground cover, canopy cover, root mass and vegetative resistance to protect soil against wind and water erosion.

Where the purpose is to improve water quality, the species to be planted shall be selected based on it's potential to assimilate (take up) nutrients of concern and prevent water quality degradation due to soil erosion. To obtain information on nutrient assimilation (uptake) rates refer to Chapter 6 of the Agricultural Waste Management Field Handbook (AWMFH).

A harvest and grazing management system shall be implemented in accordance with Florida NRCS conservation practice standards, Forage Harvest Management, Code 511, and Prescribed Grazing, Code 528, to maintain the health and vigor of the forage stand. Refer to the National Range and Pasture Handbook (NRHP) for guidance on developing grazing management plans.

Additional Criteria to Increase Carbon Sequestration

Species selected shall have the potential to increase above and below ground biomass on the site.

CONSIDERATIONS

Florida NRCS conservation practice standards Pest Management, Code 595, Prescribed Burning, Code 338, Prescribed Grazing, Code 528, Forage Harvest Management, Code 511, Brush Management, Code 314, and Grazing Land Mechanical Treatment, Code 548 may be used in combination with Pasture and Hay Planting.

When over-seeding winter annuals on areas that are being managed for spring forage harvests (hay, silage, etc), consider using small grains that mature prior to February 1. Ryegrass or other forages that mature later than February 1 compete with perennial warm season hay species and reduce the overall quality and quantity of the harvested forage.

In situations where wildlife management is an objective, select species that will enhance the

food and cover value of the site. Refer to Florida NRCS conservation practice standards Upland Wildlife Habitat Management, Code 645 and Wetland Wildlife Habitat Management, Code 644 for additional guidance.

When planting a mixture of forage species select species that are similar in palatability and grazing tolerance to avoid spot grazing.

In areas frequented by high densities of animals, establish species that can tolerate close grazing and trampling.

Where wildlife management is an objective, use an approved habitat evaluation procedure to aid in selecting plant species and providing for other habitat requirements.

Where air quality concerns exist, utilize site preparation techniques and timing of site preparation activities to minimize airborne particulate matter generation and transport.

PLANS AND SPECIFICATIONS

Plans and specifications for pasture and hay planting shall be prepared for each site or management unit and shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose(s).

The landowner/manager shall be provided detailed specifications in a site-specific job sheet, or in the practice narrative of the conservation plan.

These plans and specifications shall be consistent with this standard and other applicable reference material.

At a minimum the plans and specifications shall include:

1. Size and location of the area to be planted.
2. Species or mixture to be planted, including seeding and/or planting rates per acre.
3. Date and method of planting.
4. Type of seed bed preparation required.
5. Fertilizer and lime to be applied.
6. Operation and maintenance requirements.

OPERATION AND MAINTENANCE

The operator will inspect and calibrate equipment prior to use to insure proper rate, distribution and depth of planting material.

Growth of seedlings or sprigs shall be monitored for water stress. Depending on the severity of drought, water stress may require reducing weeds, early harvest of any companion crops, irrigating when possible, or replanting failed stands.

Undesirable plants shall be controlled by cutting, using a selective herbicide, or by manipulating livestock stocking rates, density, and duration of stay.

Harvest intervals, cutting height, grazing management and stocking rates may need periodic adjustment based on the health and vigor of the forage.

Insects and diseases shall be controlled when an infestation threatens stand survival.

Pasture and hay lands shall be evaluated periodically throughout the year to determine management adjustments or inputs needed to achieve the desired purpose(s).

REFERENCES

Florida Exotic Pest Plant Council (FLEPPC)
http://www.fleppc.org/Plantlist/list.htm

NRCS Agricultural Waste Management Field Handbook (AGWMFH), 1992

National Cultural Resources Procedures Handbook (NCRPH)

National Environmental Compliance Handbook (NECH)

NRCS Field Office Technical Guide (FOTG)
National NRCS Conservation Practice Standard
Pasture and Hay Planting, Code 512, 2004

Florida NRCS Conservation Practice Standards
Forage Harvest Management, Code 511
Grazing Land Mechanical Treatment, Code 548
Nutrient Management, Code 590
Pest Management, Code 595
Prescribed Grazing, Code 528
Prescribed Burning, Code 338
Upland Wildlife Habitat Management,

Code 645
Wetland Wildlife Habitat Management, Code 644

NRCS Florida Agronomy Handbook (FAH)

NRCS General Manual (GM)
Title 190, Part 410.22-Procedures for NRCS Assisted Programs
Title 190, Part 410.26-Protection of Wetlands
Title 190, Part 414-Invasive Species
Title 420, Part 401-Cultural Resources
Title 450, Part 401-Technical Guides

NRCS National Food Security Act Manual (NFSAM), 3rd ed., Nov., 1996

NRCS National Food Security Act Manual (NFSAM), 4th ed., Apr., 2004

National Planning Procedures Handbook (NPPH)
FL Supplements to Parts 600.1 and 600.6

NRCS Range and Pasture Handbook (NRPH), 1997

Southern Forages 3rd ed., D.M. Ball, C.S. Hoveland, and G.D. Lacefield, 2002

UF/IFAS Florida Forage Handbook, C. Chambliss editor, 1999